

**FACT SHEET FOR NPDES PERMIT WA-002065-6**  
**FACILITY NAME CITY OF COLLEGE PLACE**

**SUMMARY**

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## **INTRODUCTION**

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

<b>GENERAL INFORMATION</b>	
Applicant	City of College Place
Facility Name and Address	City of College Place Wastewater Treatment Plant 430 Owens Rd., Walla Walla, WA 99362-8115
Type of Treatment:	Activated Sludge (Sequencing Batch Reactor)
Discharge Location	Garrison Creek (Tributary to Walla Walla River) Latitude: 46° 01' 52" N Longitude: 118° 25' 05" W.
Water Body ID Number	WA-32-1080

## **BACKGROUND INFORMATION**

### *DESCRIPTION OF THE FACILITY*

#### **HISTORY**

Historically, treated effluent from the College Place WWTP has been discharged into Garrison Creek approximately 5000 feet upstream from its confluence with the Walla Walla River. An area farmer applied a portion of the effluent to crops with the remainder mixing with creek flows. The Corps of Engineers controls flows in Garrison and Yellowhawk Creeks at its headworks as part of the Mill Creek Flood Control Project. During a normal irrigation season, Ecology instructs the Corps as to the amount of water to be diverted into Garrison Creek, which normally ranges from 10 to 15 cfs. However, during low flow periods, flows to Garrison Creek are impacted by the senior water rights on Yellowhawk Creek. It is reported that effluent would make up virtually the entire creek flow during parts of the fall season.

The approved 1996 Facilities Plan estimated the 20-year population growth at 11,813 and selected the sequencing batch reactor activated sludge treatment process. Because of the problem with irrigators, flow needs in the creek and cost of some alternatives, the City selected to treat to Class C Reclaimed Water and move the outfall downstream of the last irrigation diversion (Travaille Ditch). The outfall was relocated into the existing West Wetland which flows back into Garrison Creek downstream of Travaille Ditch. During portions of the year, the City also desires the option to spray irrigate effluent on City owned farmland. Therefore Lagoon No. 2 and irrigation pond and holding area for water to be applied to farm land when approved. The Permittee is currently considering the irrigation as the main method of effluent disposal during the summer low flow periods (April through November).

Effluent flows from the reaeration basin can be redirected by two airlift pumps into the constructed wetland then through an outlet structure and rock filter window to the West Wetland. The constructed wetland was originally designed to improve effluent conditions prior to discharge back to the creek. The constructed wetland was also designed to discharge to a Class 2 wetland that was improved by the City. However, the constructed wetland failed to produce the required effluent enhancement and was taken off line until further analysis and litigation is complete. The Permittee has proposed an alternative of land application of effluent during this critical receiving water period. This permit provides the Permittee the opportunity to complete this proposal to meet effluent limits.

The construction for this facility was originally scheduled for completion in 1<sup>st</sup> quarter of 2001. The NPDES permit was issued and became effective on that date. The actual construction was completed on July 31, 2001 because of construction and weather problems. Since the final completion date, the facility has experienced a number of problems with equipment and treatment problems.

Since February 2002, the facility was producing effluent that is in compliance with the permit. However, the facility has experienced periodic violations due to equipment malfunction or computer PLC control problems.

#### **COLLECTION SYSTEM STATUS**

The Burlingame sewer was constructed in the 1910's as a combined sewer for Walla Walla College, discharging to the Walla Walla River. In 1953, the City of College Place assumed operation of the sewer and constructed a sewage treatment plant and a collection system using the Burlingame sewer as an interceptor. Sewage collection mains have been extended as the City has expanded its boundaries and modifications have been made to the sewage plant. The City has a separate surface water collection system.

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The collection system is comprised of four pump stations and approximately 160,000 lineal feet of 6 to 30-inch gravity pipeline and 4 to 8-inch pressure sewers. The system also consists of approximately 200,000 lineal feet of 4 and 6-inch side sewers.

The summary of flow data shows that the average annual per capita flow for the five-year period (1991-1995) is 98.5 gallons per day (gpd); the maximum month average per capita flow is 109 gpd; and a peak day flow of 135 gpd. These data indicate that the collection system for College Place does not have excessive inflow and infiltration.

#### **TREATMENT PROCESSES**

The wastewater treatment facility was constructed and placed into operation in the year 2001. The facility is located approximately one mile southwest of the city limits, in Walla Walla County, on a 14.4 acre parcel of land owned by the City. The parcel is surrounded by productive agricultural land with pockets of low-density single family housing. In order to meet effluent requirements in Garrison Creek and for irrigation of City owned land, a low rate biological treatment plant and effluent disinfection was designed.

The treatment facilities improvements include uses the Sequencing Batch Reactor (SBR) activated sludge process with coagulation, filtration and ultraviolet disinfection and two sludge storage tanks.

The plant consists of grit chamber, fine screens, raw sewage pump station, three circular Sequencing Batch Reactors (SBR) treatment basins, equalization basin (121,300 gallons), coagulation/flocculation system, two disk woven cloth effluent filters, UV disinfection (3 trains), reaeration basin with 2 effluent airlift pumps, constructed wetland with outlet to existing wetland, irrigation storage basin with two irrigation pumps for land application for crops, sludge holding tanks (394,000 gallons), two meter belt filter press, a sludge drying bed with a volume of 40,000 cubic feet, old drying beds are still usable, sludge trucked from beds to spray fields by side cast solids spreader & tractor on 148.4 acres of land acquired by the City that includes an effluent spray field for application to crop lands.

The dewatered sludge is transferred to a 95,000 ft<sup>2</sup> drying bed. Dried sludge will be hauled in City owned trucks and applied on City owned land (160 acres) near the treatment plant site. The plant site also includes a truck washing facility for the City owned sludge trucks.

An irrigation storage basin is provided for the treated effluent prior to the City's irrigation system. The stored effluent can be pumped by two irrigation pumps to a City owned spray field. The treated effluent is diverted from the 30-inch secondary effluent main between the UV unit to the re-aeration basin to either the storage lagoon or directly to the two irrigation pumps.

The constructed wetland is equipped with an oxygen header and a well water header to reoxygenate and cool the effluent prior to discharge into the West Wetland. Treated effluent is then channeled through the rehabilitated West Wetland to Garrison Creek at the downstream end of the Travaille Ditch headworks. During high winter flow periods, treated effluent may also discharge to Garrison Creek through the existing 30-inch diameter outfall pipe at the overflow weir in the outlet basin of the reaeration basin.

The previously approved Facility Plan included design that would allow the City to irrigate on its own land and continue to discharge to Garrison Creek.

Under Ecology's Water Quality Standards (Chapter 173-201A WAC), discharges to farmland or Garrison Creek will be protective to the environment. However, this discharge requires additional treatment beyond standard secondary treatment levels to meet effluent discharge requirements in Garrison Creek. The City has determined that a design to meet the Water Quality standards with the added layers of reliability will provide them with the needed protection for land application of the effluent. The Facility

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Plan allowed the City the options to discharge to a constructed wetland then to Garrison Creek or to Garrison Creek directly.

**DISCHARGE OUTFALL**

Oxidized, coagulated, filtered and disinfected effluent can be discharged (Outfall No. 1) from the re-aeration basin outlet manhole by two airlift pumps into the Constructed Wetland then by weir and a 12-inch outfall pipe (Outfall No. 1b) into the West Wetland then to Garrison Creek during non-irrigation season. The re-aeration basin outlet manhole is also equipped with an overflow weir that can discharge effluent to the existing 30-inch outfall pipe directly into Garrison Creek (Outfall No. 2) during high flows. The re-aeration tank is also equipped with a by-pass pipe and outlet valves that can direct treated effluent either to the constructed wetland or directly into Garrison Creek.

**RESIDUAL SOLIDS**

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the sequencing batch reactors (SBRs), in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill. Solids removed from the SBRs are discharged to two existing digesters converted to sludge holding tanks (394,000 gallons), two meter belt filter press, a sludge drying bed with a volume of 40,000 cubic feet, sludge trucked from beds to spray fields by side cast solids spreader & tractor on 148.4 acres of land acquired by the City that includes an effluent spray field for application to crop lands. Processed solids are land applied under a permit from the Walla Walla County Health District.

**PERMIT STATUS**

The previous permit for this facility was issued on June 28, 2000. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD<sub>5</sub>), Total Suspended Solids (TSS), pH, Total Fecal Coliform bacteria, ammonia, dissolved oxygen, and temperature.

An application for permit renewal was submitted to the Department on December 10, 2004 and accepted by the Department on December 29, 2004.

**SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT**

The facility received its last inspection on September 9, 2004.

During the history of the previous permit, the Permittee has not remained in compliance, based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department. However, the operations and maintenance of the facility has improved over the last two years (see tables below for violations).

TABLE 1	April through November					
	Total Coliform Violations		Ammonia	Ammonia	Temperature	Dissolved Oxygen
	7-day Median	Maximum Day	Avg. Mo.	Max Day	Max Day	Min. Day
	> 23 cfu/100 mL	> 240 cfu/100 mL	>1.0 mg/L	>2.0 mg/L	>20 C	<8.0 mg/L
2001 and 2002	148	52	5	13	204	428
2003 and 2004	0	6	2	0	55	128

Sept 2003 through January 2005, maximum day temperature exceeded 20° C only 2% of the time; minimum day dissolved oxygen was less than 8 mg/L only 3.6% of the time.

December through March
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TABLE 2	Total Coliform Violations		Ammonia	Ammonia
	Monthly Average	Weekly Average	Avg. Mo.	Max Day
	> 23 cfu/100 mL	> 240 cfu/100 mL	(>2.0 mg/L)	(>3.0 mg/L)
2001 and 2002	7*	1*	14	11
2003 and 2004	2**	3**	1	0

\* Feb – Mar 2001; Dec. 2001 to Mar. 2002

\*\* Dec. 2002 to Mar. 2003; Dec. 2003 to Mar. 2004; Dec. 2004 to Jan. 2005

In accordance with WAC 173-221-030(11), the 95<sup>th</sup> percentile analysis of two years of effluent data was used to assess the ability of the treatment facility to “consistently achieve” effluent limitations. A review of the effluent data (see Table 1 and 2, above) shows that since September 2003 that the effluent concentrations for temperature and dissolved oxygen were consistently achievable. Temperature and dissolved oxygen requirements during the April through November time periods need additional improvement to be in compliance with permit limitations. According to the following schedule, the permittee shall provide the Department with a plan to bring these parameters into compliance (see permit Special Conditions S1.D.).

This permit contains the following schedule to allow the Permittee time to consistently achieve final effluent limitations. The conditions in this schedule reflect the Department of Ecology’s authority to apply the requirements in WAC 173-220-140.

Parameter ..... Compliance Date

Analysis of Effluent Data (Sept. 2003 to Sept. 2005)..... October 31, 2005

Submit Engineering Report for Modifications..... January 31, 2006

Design Recommended Alternative ..... October 31, 2006

Complete Recommended Modifications..... March 31, 2007

Meet Final Effluent Limits..... June 30, 2007

\* The Department shall review monitoring data to determine if facility can consistently achieve treatment for temperature and dissolved oxygen as designed to meet effluent limitations. If analysis shows consistently achievable treatment for temperature and DO, then the schedule will be delayed. If schedule is delayed, the effluent data will be analyzed annually during this permit term to determine need for meeting a revised schedule for compliance. If consistently achievable treatment for temperature and DO cannot be met, the Permittee shall evaluate additional feasible methods to meet limits and submit to the amended engineering report as per the above schedule.

**WASTEWATER CHARACTERIZATION**

The concentration of pollutants in the discharge was reported in the NPDES application and in the discharge monitoring reports (September 2003 through December 2004). The effluent is characterized as follows:

**Table 3: Wastewater Characterization**

Parameter	Annual Average		Lowest monthly		Highest monthly	
	Apr-Nov	Dec-Mar	Apr-Nov	Dec-Mar	Apr-Nov	Dec-Mar
Flow, mgd	0.89	1.12	0.75	0.91	1.04	1.40
Turbidity, NTU	1.16	0.87	0.24	0.35	8.78	2.43
BOD, mg/L	2.47	2.03	1.65	1.48	4.80	4.23
TSS, mg/L	1.13	1.53	0.03	0.10	5.47	10.55



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Total coliform bacteria	2.16	2.12	0.01	0.50	31.39	2.87
pH	7.24	7.78	6.72	7.28	7.73	8.38
Hardness (CaCO <sub>3</sub> ), mg/L	98.45	109.50	91.60	102.50	108.18	115.50
Ammonia (as N), mg/L	0.23	0.30	0.16	0.14	0.35	0.93
Dissolved oxygen, mg/L	9.19	10.08	7.56	8.63	10.80	0.00
Temperature, °C	17.25	13.49	13.89	10.33	20.28	15.75

**PROPOSED PERMIT LIMITATIONS**

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

**DESIGN CRITERIA**

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from the approved College Place Wastewater Facility/Comprehensive Sewer Plan, dated 1996; predesign report and subsequent amendments prepared by Anderson Perry and Associates, and are presented as follows:

**Table 4: Design Standards for City of College Place WWTP.**

Parameter	Design Quantity
Monthly average flow (max. month)	1.65 MGD
Annual average flow	1.50 MGD
Maximum day flow	2.00 MGD

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Instantaneous peak flow	5.70 MGD
BOD <sub>5</sub> influent loading (max. month)	4,500 lb./day
TSS influent loading	3,400 lb./day
Ammonia (as N) (max. month)	500 lb./day
Design population equivalent (2015)	11,813

**TECHNOLOGY-BASED EFFLUENT LIMITATIONS**

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD<sub>5</sub>, and TSS are taken from Chapter 173-221 WAC are:

**Table 5: Technology-based Limits.**

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD <sub>5</sub> (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly design flow (1.65 MGD) x Concentration limit (15 mg/L) x 8.34 (conversion factor) = mass limit 206 lb./day.

The weekly average effluent mass loading is calculated as 1.5 x monthly loading = 309 lbs/day.

**SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS**

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual

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waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

**NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE**

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

**NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH**

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

**NARRATIVE CRITERIA**

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

**ANTIDegradation**

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when receiving waters are of higher quality than the criteria assigned, the existing water quality shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

**CRITICAL CONDITIONS**

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

**MIXING ZONES**

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may

not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

#### DESCRIPTION OF THE RECEIVING WATER

The facility discharges to Garrison Creek which is designated as a Class A receiving water in the vicinity of the outfall. Significant nearby non-point sources of pollutants include upstream housing and agricultural areas. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

#### SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	8 mg/L minimum
Temperature	18 degrees Celsius maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

#### CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. . Because Garrison Creek is almost dry during parts of the fall season, a discharge of effluent at this critical condition is required to meet Water Quality Standards for a Class A receiving water at the confluence with the Walla Walla River. The design of the effluent discharge to the constructed wetland through the existing West Wetland prior to discharging back to Garrison Creek downstream of the Travaille diversion is determined to be protective of beneficial uses in the receiving water.

The City's WWTP design also considers critical conditions when temperatures exceed Class A Receiving Water Standards of 20.0 °C for the protection of beneficial uses in Garrison Creek during a direct discharge. A discharge at the end of the re-aeration basin may be likely during high temperature and flow events through the treatment plant. Due to the intermittent character of Garrison Creek during low flow events, and to improve water quality in Garrison Creek, and the need to protect in-stream resources in the Walla Walla River, the receiving water downstream of the outfall will be used to determine compliance

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with Class A Water Quality Standards at the confluence of the Walla Walla River. The improvements of the upstream and downstream riparian corridor reduced temperatures in Garrison Creek and are an important element of a complete water quality plan for protection of beneficial uses in the Walla Walla River as well as Garrison Creek. These recommendations were included in the Facility Plan submitted by the Permittee and approved by the Department.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water. Due to the limited dilution of the receiving stream, Ecology established more stringent effluent discharge requirements in this permit. These requirements represent discharge limits that are better than the limits of conventional treatment technology. The low BOD<sub>5</sub> and TSS requirements will require very efficient sedimentation within the treatment process. The extremely low NH<sub>3</sub>-N requirements will require relatively long aerobic solids residence times in the SBRs. The effluent dissolved oxygen (DO) limit will necessitate post-secondary aeration. The pH limit may require chemical addition. A possible temperature limit will be addressed in the design of the constructed wetland and downstream outfall.

The City's WWTP design also considers the critical winter flow condition and beneficial uses for Garrison Creek during a direct discharge. An overflow weir was designed into the discharge end of the re-aeration basin; therefore, a direct discharge is possible during a high flow event through the treatment plant. Ambient data at critical conditions in the vicinity of the overflow outfall considered both historical data and a monitoring study conducted in 1996. The ambient background data used for this permit includes the following information from that Study.

Table 6

Parameter	Value used
7Q10 low flow	2.6 cfs
Velocity	1.12 ft/sec
Depth	0.98 feet
Width	5.25 feet
Roughness (Manning)	n=0.030
Slope	0.0075 ft/ft
Temperature	18.3o C
pH (high)	7.4
Dissolved Oxygen	7.1 mg/L
Total Ammonia-N	0.02 mg/L
Fecal Coliform	580 to 2500/100 mL storm related
Conductivity	305

Table 6

Parameter	Value used
Turbidity	15 NTU
Hardness	59.2 mg/L as CaCO <sub>3</sub>
Copper	12.0 µg/L (total recoverable estimated value)
Zinc	9.1 µg/L (total recoverable estimated value)
All Other Metals	0.0 (below detection limits)

BOD<sub>5</sub>--Under critical conditions there was a prediction of a violation of the dissolved oxygen criterion for the receiving water. Due to the fact that Garrison Creek flows are nearly depleted prior to the WWTP outfall, the impact of BOD<sub>5</sub> and dissolved oxygen on the receiving water was analyzed. Because of the intermittent character of the receiving stream and its general use as an irrigation supply, the Department has established the stream from the outfall to confluence with the Walla Walla River as the mixing zone and is used to meet the Class A receiving water standards.

With effluent cooling and re-aeration, a BOD<sub>5</sub> effluent limit of 15 mg/L and an effluent dissolved oxygen limit of 8.0 mg/L was found to be protective of the water quality criteria for a Class A receiving water. Therefore a water quality limitation was imposed instead of the technology-based limitation. If effluent is discharged to the constructed wetland, dissolved oxygen shall be monitored at a point prior to Garrison Creek

The Facility Plan used BOD<sub>5</sub> to establish the monthly average design treatment standard at 15 mg/L (weekly average at 23 mg/L). This is reflected in Condition S1 of the permit. The City may request to use the CBOD test in place of the BOD test; however, the comparable CBOD limitation in Condition S1 will be lower (BOD of 15 mg/L = CBOD at 12 mg/L; BOD of 23 mg/L = CBOD at 18 mg/L). This relationship is based on the BOD to CBOD ratio of 1.27 developed in the approved Facility Plan (page 2-9).

Temperature and pH--The impact of pH and temperature were modeled using the calculations from EPA, 1988. The input variables were dilution factor 1.39, upstream temperature 20.5 °C, upstream pH 7.69, upstream alkalinity 58 (as mg CaCO<sub>3</sub>/L), effluent temperature 22 °C, effluent pH of 7.3, and effluent alkalinity 163.0 (as mg CaCO<sub>3</sub>/L). However, due to the water quality limited character of intermittent receiving water, the pH levels were set at 6.5 to 8.5 from April through November.

Under critical conditions for an intermittent receiving stream, the receiving water temperature shall not exceed 20 °C. Temperature data gathered showed a 90 percentile temperature of 23 °C upstream of the existing outfall. Therefore, there is an existing violation of the temperature criteria for a Class A receiving water. Because of the intermittent character of Garrison Creek and the requirement to protect existing in-stream biota and salmonids at the Walla Walla River, an effluent limit of 18.7 °C was found to meet the water quality criterion for temperature.

As an interim measure, whenever effluent temperatures exceed 18.7 °C the effluent may be re-directed to the constructed wetland through the West Wetland to Garrison Creek downstream of the Travaille irrigation diversion. The outlet structure from the constructed wetland is equipped with a cooling water system. Temperatures shall be monitored at the outlet structure of constructed wetland prior to discharge to the West Wetland to determine when to activate the cooling water header system. The permit includes a requirement to monitor temperature of the effluent, Garrison Creek upstream of the overflow outfall,



and the constructed wetland outlet for 12 months. The monitoring data will be analyzed to determine the need for effluent temperature limits.

Fecal coliform-- The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 1.38.

Under critical conditions there was a prediction of a violation of the fecal coliform criterion for the receiving water with the technology-based limit.

The WWTP was not designed to provide an alternative discharge point, as per the standards, when the effluent does not meet the required reclaimed water effluent limits. Therefore, the WWTP is not classified as a Reclaimed Water facility. The WWTP is designed to consistently meet the equivalent of a Class C maximum daily total coliform limit of 23 CFU/100 mL and a not to exceed Class A receiving water standards of 100 CFU/100 mL.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: ammonia, copper, silver and zinc. Except for ammonia, the metals detected (copper and zinc) in the surface water were below water quality criteria. Silver was not detected in the ambient surface water. With the extensive changes to the treatment system, the copper and silver was monitored twice per month during the second year of this permit. The Department reviewed the monitoring data and determined that no metals effluent limitations were necessary.

#### Human Health

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge does not contain chemicals of concern based on existing data or knowledge. The discharge will be re-evaluated for impacts to human health at the next permit reissuance.

#### Whole Effluent Toxicity

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC. Therefore, no whole effluent toxicity testing is required in this permit. The Department may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods.

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However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment.

Chronic toxicity tests measure various sublethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC<sub>50</sub>, EC<sub>50</sub>, IC<sub>25</sub>, etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center 360-407-7472 for a copy. Ecology recommends that Permittees send a copy of the acute or chronic toxicity sections(s) of their permits to their laboratory of choice.

The WET tests during effluent characterization indicate that no reasonable potential exists to cause receiving water acute toxicity, and the Permittee will not be given an acute WET limit and will only be required to retest the effluent prior to application for permit renewal in order to demonstrate that acute toxicity has not increased in the effluent.

If the Permittee makes process or material changes which, in the Department's opinion, results in an increased potential for effluent toxicity, then the Department may require additional effluent characterization in a regulatory order, by permit modification, or in the permit renewal. Toxicity is assumed to have increased if WET testing conducted for submission with a permit application fails to meet the performance standards in WAC 173-205-020, "whole effluent toxicity performance standard". The Permittee may demonstrate to the Department that changes have not increased effluent toxicity by performing additional WET testing after the time the process or material changes have been made.

The WET tests during effluent characterization indicate that no reasonable potential exists to cause receiving water chronic toxicity, and the Permittee will not be given a chronic WET limit and will only be required to retest the effluent prior to application for permit renewal in order to demonstrate that chronic toxicity has not increased in the effluent.

If the Permittee makes process or material changes which, in the Department's opinion, results in an increased potential for effluent toxicity, then the Department may require additional effluent characterization in a regulatory order, by permit modification, or in the permit renewal. Toxicity is assumed to have increased if WET testing conducted for submission with a permit application fails to meet the performance standards in WAC 173-205-020, "whole effluent toxicity performance standard". The Permittee may demonstrate to the Department that changes have not increased effluent toxicity by performing additional WET testing after the time the process or material changes have been made.

EPA requires Treatment works that meets one or more of the following criteria must complete Part E (Toxicity Testing Data): 1) has a design flow rate greater than or equal to 1 mgd, 2) is required to have a pretreatment program (or has one in place), or 3) is otherwise required by the permitting authority to submit results of toxicity testing. See NPDES Permit Application Form 2A, Supplemental Application Information, Subsection E for reporting Toxicity Testing Data. The



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Permittee is required in the permit to test final effluent for acute and chronic toxicity once in the last summer and once in the last winter prior to submission of the application for permit renewal.

If no biomonitoring data is required, do not complete Part E. Refer to the Application Overview for directions on which other sections of the form to complete.

**HUMAN HEALTH**

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the effluent is likely to have chemicals of concern for human health. The discharger's high priority status is based on knowledge of data reported in the Walla Walla River Pesticides and PCBs Total Maximum Daily Load Analysis indicating that regulated chemicals (PCBs) occur in the discharge and the applicant discharges to a waterbody that is 303(d) listed for that regulated chemical (see following section regarding the TMDL). After the Department completes the TMDL and it is approved by U. S. Environmental Protection Agency, and Water Reclamation facility is completed, the permit effluent limits for PCB will be re-evaluated. If necessary, a compliance schedule will be established for meeting the PCB limitations.

**SEDIMENT QUALITY**

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

***COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED JUNE 30, 2000***

During this permit term, the treatment plant has had a number of design, mechanical, and O&M problems that has caused a great number of permit violations. In working with the permittee, the Department has determined that the permittee has improved the operations and maintenance of the facility and repaired the mechanical problems over the last two years (2003-2004)

CBOD5 (monthly and weekly average).....(BOD5 ) 15 mg/L and 23 mg/L  
TSS (monthly and weekly average)..... 15 mg/L and 23 mg/L  
Total Coliform (mo. & wkly avg.).....n/a and 23/100 mL  
pH.....6.0 minimum to 9.0 maximum  
Total Ammonia (as NH<sub>3</sub>-N) ..... 1.0 mg/L and 2.0 mg/L  
Temperature (maximum daily) ..... 20.0 °C  
Dissolved Oxygen (minimum daily)..... 8.0 mg/L

## **MONITORING REQUIREMENTS**

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring for ammonia (as N), dissolved oxygen, and temperature is being required to further characterize the effluent. These pollutants could have a significant impact on the quality of the surface water.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503. The requirements for disposal of sludge on land owned by the Permittee are covered under Statewide General Permit for Biosolids Management Number BA0020656A, issued April 5, 1999. The monitoring data required for compliance with metals listed in Table 1 and 3 of the Biosolids General Permit shall be sent to the Department in accordance with the minimum sampling frequency noted in Special Condition S2 of this permit.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 1994) for activated sludge plants under 2.0 MGD

Additional monitoring is required in order to further characterize the effluent. These monitored pollutants could have a significant impact on the quality of the surface water.

### ***LAB ACCREDITATION***

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. The laboratory at this facility is accredited for NH<sub>3</sub>, BOD<sub>5</sub>, TSS, pH, dissolved oxygen, turbidity, and coliforms.

## **OTHER PERMIT CONDITIONS**

### ***REPORTING AND RECORDKEEPING***

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

### ***PREVENTION OF FACILITY OVERLOADING***

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S.4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4. restricts the amount of flow.

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***OPERATION AND MAINTENANCE (O&M)***

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

***RESIDUAL SOLIDS HANDLING***

To prevent water quality problems the Permittee is required in permit condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under Chapter 70.95J RCW and Chapter 173-308 WAC. The disposal of other solid waste is under the jurisdiction of the Walla Walla County Health District.

Requirements for monitoring sewage sludge and recordkeeping are included in this permit. This information will be used by Ecology to develop or update local limits and is also required under 40 CFR 503.

***PRETREATMENT***

An update to the industrial user survey will be required to determine the extent of compliance of all industrial users of the sanitary sewer and wastewater treatment facility with federal pretreatment regulations (40 CFR Part 403 and Sections 307(b) and 308 of the Clean Water Act), with state regulations (Chapter 90.48 RCW and Chapter 173-216 WAC), and with local ordinances.

***Federal and State Pretreatment Program Requirements***

Under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986), the Department of Ecology (Department) has been delegated authority to administer the Pretreatment Program (i.e. act as the Approval Authority for oversight of delegated Publicly Owned Treatment Works (POTWs)). Under this delegation of authority, the Department has exercised the option of issuing wastewater discharge permits for significant industrial users discharging to POTWs which have not been delegated authority to issue wastewater discharge permits.

There are a number of functions required by the Pretreatment Program which the Department is delegating to such POTWs because they are in a better position to implement the requirements (e.g. tracking the number and general nature of industrial dischargers to the sewerage system). The requirements for a Pretreatment Program are contained in Title 40, part 403 of the Code of Federal Regulations. Under the requirements of the Pretreatment Program (40 CFR 403.8(f)(1)(iii)), the Department is required to approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) (40 CFR 403.8 (f)(1)(i)).

The Department is responsible for issuing State Waste Discharge Permits to SIUs and other industrial users of the Permittee's sewer system. Industrial dischargers must obtain these permits from the Department prior to the Permittee accepting the discharge (WAC 173-216-110(5)) (Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit. Such dischargers should contact the Department to determine if a permit is required.). Industrial dischargers need to apply for a State Waste Discharge Permit sixty days prior to commencing discharge. The conditions contained in the permits will include any applicable conditions for categorical discharges,

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loading limitations included in contracts with the POTW, and other conditions necessary to assure compliance with State water quality standards and biosolids standards.

The Department requires this POTW to fulfill some of the functions required for the Pretreatment Program in the NPDES permit (e.g. tracking the number and general nature of industrial dischargers to the sewage system). The POTW's NPDES permit will require that all SIUs currently discharging to the POTW be identified and notified of the requirement to apply for a wastewater discharge permit from the Department. None of the obligations imposed on the POTW relieve an industrial or commercial discharger of its primary responsibility for obtaining a wastewater discharge permit (if required), including submittal of engineering reports prior to construction or modification of facilities (40 CFR 403.12(j) and WAC 173-216-070 and WAC 173-240-110, et seq.).

*Wastewater Permit Required*

RCW 90.48 and WAC 173-216-040 require SIUs to obtain a permit prior to discharge of industrial waste to the Permittee's sewerage system. This provision prohibits the POTW from accepting industrial wastewater from any such dischargers without authorization from the Department.

*Requirements for Routine Identification and Reporting of Industrial Users*

The NPDES permit requires non-delegated POTWs to "take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging to the Permittee's sewerage system". Examples of such routine measures include regular review of business tax licenses for existing businesses and review of water billing records and existing connection authorization records. System maintenance personnel can also be diligent during performance of their jobs in identifying and reporting as-yet unidentified industrial dischargers. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW is required to notify an industrial discharger, in writing, of their responsibilities regarding application for a State waste discharge permit and to send a copy of the written notification to the Department. The Department will then take steps to solicit a State waste discharge permit application.

*Requirements for Performing an Industrial User Survey*

This POTW has the potential to serve significant industrial or commercial users and is required to perform an Industrial User Survey. The goal of this survey is to develop a list of SIUs and PSIUs, and of equal importance, to provide sufficient information about industries which discharge to the POTW, to determine which of them require issuance of State waste discharge permits or other regulatory controls. An Industrial User Survey is an important part of the regulatory process used to prevent interference with treatment processes at the POTW and to prevent the exceedance of water quality standards. The Industrial User Survey also can be used to contribute to the maintenance of sludge quality, so that sludge can be a useful biosolids product rather than an expensive waste problem. An Industrial User Survey is a rigorous method for identifying existing, new, and proposed significant industrial users and potential significant industrial users. A complete listing of methodologies is available in the Department of Ecology guidance document entitled "Conducting an Industrial User Survey".

*Duty to Enforce Discharge Prohibitions*

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer. The first portion of the provision prohibits acceptance of pollutants which cause pass through or interference. The definitions of pass through and interference are in Appendix B of the fact sheet..

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The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition wastes with excessive BOD, petroleum based oils, or which result in toxic gases are prohibited to be discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from the Department. The discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

***Support by the Department for Developing Partial Pretreatment Program by POTW***

The Department has committed to providing technical and legal assistance to the Permittee in fulfilling these joint obligations, in particular assistance with developing an adequate sewer use ordinance, notification procedures, enforcement guidelines, and developing local limits and inspection procedures.

***GENERAL CONDITIONS***

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

**PERMIT ISSUANCE PROCEDURES**

***PERMIT MODIFICATIONS***

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

***PERMIT REOPENER – WALLA WALLA RIVER WATERSHED TMDL STUDY***

The department will complete the Walla Walla River Watershed Total Maximum Daily Load studies (TMDLs) and submit the document to the Environmental Protection Agency (EPA) for review and approval. After approval by EPA, the documents will be used by the department to develop a Detailed Implementation Plan (DIP). The guidance and schedules in the DIP will be used to develop language and waste load allocations in an amended fact sheet and permit (WA-002065-6). The Department will then reopen and modify the permit to include appropriate language and waste load allocations for discharge to Garrison Creek. The permit will be subject to normal factual (15-days) and public (30-days) review process prior to final issuance.

***RECOMMENDATION FOR PERMIT ISSUANCE***

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this permit be issued for 5 years.

**REFERENCES FOR TEXT AND APPENDICES**

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.
1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.
1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.
1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.
1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

Laws and Regulations( <http://www.ecy.wa.gov/laws-rules/index.html> )

Permit and Wastewater Related Information

(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)



**APPENDIX A--PUBLIC INVOLVEMENT INFORMATION**

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

The Department will publish a Public Notice of Draft (PNOD) on May 4, 2005, in the Walla Walla Union Bulletin to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator  
Department of Ecology  
Eastern Regional Office  
4601 North Monroe Street  
Spokane, WA 99205-1295

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (509) 329-3400, or by writing to the address listed above.

This permit and fact sheet were written by Jerry Anderson, P.E.

## **APPENDIX B--GLOSSARY**

**Acute Toxicity**--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

**AKART**-- An acronym for "all known, available, and reasonable methods of prevention, control, and treatment".

**Ambient Water Quality**--The existing environmental condition of the water in a receiving water body.

**Ammonia**--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

**Average Monthly Discharge Limitation** --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

**Average Weekly Discharge Limitation** -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Beneficial Use** – The use of reclaimed water that has been transported from the point of production to the point of use without an intervening discharge to the waters of the state, for a beneficial purpose.

**Best Management Practices (BMPs)**--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

**BOD<sub>5</sub>**--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD<sub>5</sub> is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

**Bypass**--The intentional diversion of waste streams from any portion of a treatment facility.

**CBOD<sub>5</sub>** – The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celcius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD<sub>5</sub> is given in 40 CFR Part 136.

**Chlorine**--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

**Chronic Toxicity**--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.



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**Clean Water Act (CWA)**--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

**Combined Sewer Overflow (CSO)**--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

**Compliance Inspection - Without Sampling**--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

**Compliance Inspection - With Sampling**--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

**Composite Sample**--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

**Construction Activity**--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

**Continuous Monitoring** --Uninterrupted, unless otherwise noted in the permit.

**Critical Condition**--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

**Dilution Factor**--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

**Engineering Report**--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

**Fecal Coliform Bacteria**--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

**Grab Sample**--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

**Industrial User**-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

**Industrial Wastewater**--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

**Infiltration and Inflow (I/I)**--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

**Interference** -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

**Major Facility**--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

**Maximum Daily Discharge Limitation**--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Method Detection Level (MDL)**--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

**Minor Facility**--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

**Mixing Zone**--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

**National Pollutant Discharge Elimination System (NPDES)**--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

**Pass through** -- A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

**pH**--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

**Potential Significant Industrial User**--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;
- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

**Reclaimed Water** – Effluent derived in any part from sewage from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for a beneficial use or a controlled use that would not otherwise occur and is no longer considered wastewater.

**Sample Maximum** -- No sample shall exceed this value.

**Quantitation Level (QL)**-- A calculated value five times the MDL (method detection level).

**Significant Industrial User (SIU)**--

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority\* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority\* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

\*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

**State Waters**--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**Stormwater**--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

**Technology-based Effluent Limit**--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

**Total Coliform Bacteria**—Coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. A microbiological test is used to detect and enumerate the total coliform group of bacteria in water samples.

**Total Suspended Solids (TSS)**--Total suspended solids are the particulate

**Total Suspended Solids (TSS)**--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

**Upset**--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

**Water Quality-based Effluent Limit**--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

## **APPENDIX C--TECHNICAL CALCULATIONS**

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at  
(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

**APPENDIX D--RESPONSE TO COMMENTS**

Comments Received From the City of College Place, Dated May 20, 2005

S1.A, "Effluent Limitations – Discharge to Garrison Creek – April – November"

- The City must have the ability to discharge directly to the creek, bypassing the wetland, at any time of the year. We therefore, request that the permit contain language to this effect.

Response: The permit has always included this requirement that the effluent can be discharged either to the constructed wetland or directly to Garrison Creek any time of the year. The difference between the S1.A and S1.B is the effluent limitations for the different seasonal times.

- A footnote should be added after the temperature and dissolved oxygen limits, which states as follows: "These effluent limits are subject to the compliance schedule set forth in S1.D."

Response: This statement was added as footnote g.

- Total Coliform Bacteria: Ecology's current surface water quality standards set criteria for fecal coliform bacteria, not total coliform bacteria (WAC 173-201A-200). It is inappropriate to impose "Class A reclaimed water standards on this facility, which is not generating Class "A" reclaimed water. The permit should contain fecal coliform standards, consistent with WAC 173-201A-200.

Response: The total coliform bacteria standard was used for effluent limits because it was included in the Design Report for this facility. See WAC173-216-110(4), WAC 173-220-130(a) and WAC 173-220-150(g) for this requirement to not include effluent limitations less stringent than based on the treatment facility design. Therefore no change proposed.

- Footnote c: The reference to "reclaimed water" should be removed. If the City proceeds with land application, the land application system will not discharge to surface water and, therefore, would not be subject to the surface water discharge limits set forth in this section.

Response: The words "reclaimed water" was changed to "effluent" to clarify the intent that this is not a reclaimed water permit, as per Chapter 90.46 RCW.

- Footnote f: The wetland does not currently function appropriately and the City does not currently use it for cooling. Therefore, this footnote should be removed to avoid forcing the City to place effluent into a wetland that increases temperature of the effluent.

Response: The footnote was clarified to show that the requirement to cool the effluent with water applies only when discharging through the wetland. If the City continues to discharge directly to Garrison Creek, cooling water is not required. However, the effluent water quality requirement to meet the temperature limits will still apply for the discharge period from April through November.

S1.B: "Discharge to Garrison Creek, (December – March)"

- The City must have the ability to discharge directly to the creek, bypassing the wetland, at any time of the year. We, therefore, request that the permit contain language to this effect.

Response: The permit has always included this requirement that the effluent can be discharged either to the constructed wetland or directly to Garrison Creek any time of the year. The difference between the S1.A and S1.B is the effluent limitations for the different seasonal times.

- See comments above re heading and total coliform.

Response: See response to above comments re heading and total coliform.

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***FACILITY NAME CITY OF COLLEGE PLACE***

- Footnote e: The footnote states that final limits will be determined after two years of operation. We suggest that the final limits be deferred until the end of the compliance schedule.

Response: Footnote was changed to clarify compliance schedule agreement for all effluent limitations.

S1.C: We again renew our request to delete reference to the Garrison Creek Receiving Study, for the reasons we have previously articulated.

Response: Reference to the Study was deleted to clarify that all receiving water monitoring data was utilized in the determination of using the volume of the creek to the Walla Walla River for dilution.

S1.D: “Schedule of Compliance”

- As currently written, the permit gives the City approximately 2-1/2 years to design, construct, and meet final effluent limits for temperature and dissolved oxygen. The City may be able to meet this aggressive schedule only if the land application system is permitted as proposed. Any other scenario will require additional time. We suggest that the permit allow the length of the permit term for compliance with the final effluent limits in order to allow for the possibility that other options may be viable or necessary. This would also allow the City sufficient time within which to resolve claims against KCM for design defect associated with the wetland, which has caused most of the compliance issues.

Response: The use of a compliance schedule in a permit is to allow the City an appropriate amount of time to complete the assigned scheduled tasks. However, the schedule has to be realistic and based on the proposed plan for improving treatment and meeting effluent limitations as originally designed. The Permittee is currently out of compliance and this permit provides the schedule to bring the treatment plant back into agreement. The department also needs the schedule so the Permittee will show progress on meeting this schedule. If the City has diligently attempted to meet the schedule and additional time is needed due to conditions beyond the permittee’s control, then a department’s discretion based on the language in the footnote will be used to give the permittee additional time.

- The language followed by \* seems incorrect. We suggest that the language should be revised to state that the City cannot consistently meet the limits, that the compliance schedule will be delayed in order to allow the City time to evaluate additional feasible methods to meet the limits.

Response: The language following the \* was amended to clarify the intent and to give the permittee the option for additional time if the “consistently achievable treatment” cannot be met. The schedule was also amended to allow extra time for completion of legal and engineering requirements.

S3.F: “Maintaining a Copy of this Permit.” This condition requires the City to produce a copy of the permit upon demand to the public. There does not appear to be any support for this requirement in the state or federal law or regulations. This requirement should be deleted. If the public wants a copy of this document, it needs to make a public disclosure act request consistent with that statute. Moreover, the permit is available at the Washington State Department of Ecology.

Response: The reference to the public was removed from this section. Reference to General Condition G2 and WAC 173-216-110(3) provides the requirement for department access and review of records, including the permit.



***FACT SHEET FOR NPDES PERMIT WA-002065-6***  
***FACILITY NAME CITY OF COLLEGE PLACE***

**Fact Sheet:**

The fact sheet is much improved and we thank Ecology for the corrections. The following are our remaining comments:

Page 2, third paragraph: The last two sentences of this paragraph state as follows” “The constructed wetland is used to improve effluent conditions prior to discharge back into the creek. The constructed wetland discharges to a Class 2 wetland that is protected and enhanced by the City.” These sentences should be deleted because they are inaccurate.

Response: The sentences were changed as follows to clarify the intent of the City to provide an alternative proposal to meet effluent limits: “The constructed wetland was originally designed to improve effluent conditions prior to discharge back to the creek. The constructed wetland was also designed to discharge to a Class 2 wetland that was improved by the City. However, the constructed wetland failed to produce the required effluent enhancement and was taken off line until further analysis and litigation is complete. The Permittee has proposed an alternative of land application of effluent during this critical receiving water period. This permit provides the Permittee the opportunity to complete this proposal to meet effluent limits.”

Page 3, “Reclaimed Water Standards.” This paragraph should be deleted. It is a carry-over from the previous fact sheet, discussing alternatives that were not implemented. If anything is retained, it should be the requirement for the requirement for the amended facility plan with regard to land application.

Response: This section was replaced with the following information to clarify the City’s intent to develop the land application project as included in the previously approved facility plan. “The previously approved Facility Plan included design that would allow the City to irrigate on its own land and continue to discharge to Garrison Creek. Under Ecology’s Water Quality Standards (Chapter 173-201A WAC), discharges to farmland or Garrison Creek will be protective to the environment. However, this discharge requires additional treatment beyond standard secondary treatment levels to meet effluent discharge requirements in Garrison Creek. The City has determined that a design to meet the Water Quality standards with the added layers of reliability will provide them with the needed protection for land application of the effluent. The permit allows the City the options to discharge through the wetlands to Garrison Creek or to Garrison Creek directly.”

Page 10: The fact sheet still has a reference to the Use-Based Receiving Water Study, characterized as an intensive monitoring study conducted in September 1996. We renew our objections with regard to that study and the use of any ambient taken from that study.

Response: Reference to the Use-Based Study was changed to provide consistency throughout the permit.

Page 11: This portion of the fact sheet contains references to the constructed wetland and former monitoring location, which has been appropriately changed in this permit. This language, therefore, should be revised consistent with the permit.

Response: The change was made as proposed for permit consistency.

Page 12: The fact sheet states that the facility is not a reclaimed water facility, yet imposes a CFU limit based on Class A reclaimed water quality standards. This is incorrect and should be changed to be consistent with the surface water quality standards for fecal coliform contained in WAC 173-201A-200.



Response: The following language will replace the second and third paragraph under the heading “Fecal Coliform”: “Under critical conditions there was a prediction of a violation of the fecal coliform criterion for the receiving water with the technology-based limit. The WWTP was not designed to provide an alternative discharge point, as per the standards, when the effluent does not meet the required reclaimed water effluent limits. Therefore, the WWTP is not classified as a Reclaimed Water facility. The WWTP is designed to consistently meet the equivalent of a Class C maximum daily total coliform limit of 23 CFU/100 mL and a not to exceed Class A receiving water standards of 100 CFU/100 mL”.